

# PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

## SERIES C. JOURNAL OF MEETINGS

---

VOLUME 18.

No. 6, 1953.

---

### ORDINARY MEETING.

WEDNESDAY, 1ST JULY, 1953, at 5.30 p.m.

#### AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 3rd June, 1953.
2. Recommendations of candidates for Fellowship.
3. Announcement of election of new Fellows.
4. Additions to the Library. [See p. 33.]
5. Admission of Fellows.
6. Exhibits.

**Fellows are particularly requested to bring suitable exhibits to the Meeting even though it may not be possible to announce their intention to do so beforehand.**

*Note.*—To avoid congestion in the Library and to enable exhibits to be displayed to greater advantage, a table has been placed in the meeting-room for this purpose. Fellows are asked to place their exhibits on this table, with a suitable explanatory note, as soon as possible on the afternoon of the meeting, so that they are available for inspection there before the meeting opens.

7. Communications.

---

#### Mr. M. J. Way (a visitor).

A Problem Concerning Ants and their Influence on Insect Populations.

#### [ABSTRACT.]

In the coastal region of British East Africa ants are usually abundant, and have a strong influence on other insects.

One species, the Red Tree ant *Oecophylla longinoda*, attends many species of plant feeding Homoptera which it solicits for honey dew. The Homoptera are greatly benefited by this attendance and consequently may cause increased damage to plants.

*Oecophylla*, however, is also an efficient predator on many other insects, some of which are serious pests. Thus, coconut palms and other trees occupied by the ant are protected from damage by a species of *Theraptus* (Coreidae) which, in the absence of the ant, may cause severe crop loss.

The problem is complicated by certain other ant species, notably *Pheidole punctulata* and *Anoplolepis* spp., which attend and benefit plant-damaging Homoptera, which attack and destroy colonies of *Oecophylla*, but which are not predatory on insects such as *Theraptus*.

Mr. W. V. Harris.

A Note on Fungus Growing by Termites.

[ABSTRACT.]

Termites of the sub-family Macrotermitinae, found in the Ethiopian and Indo-Malayan Regions, are organised in large and complex societies in which the so-called fungus gardens are a prominent feature. Originally the white spore clusters which grow on the matrix of wood-pulp were regarded as a source of food for the termites and gave rise to the idea of "insect gardeners." More recently evidence has been produced which indicates that these spore clusters are of no particular importance in the termite diet, and the more mechanical function of providing air-conditioned nurseries has been assigned to the fungus comb. Work now in progress on nutrition in the Macrotermitinae suggests that the matrix itself is of importance as a source of food for the worker termites, which can be maintained alive in isolated groups on a diet which includes fungus comb for much longer periods than if the fungus comb is omitted. Fungus-growing termites do not have an intestinal fauna rich in protozoa.

Certain species of *Odontotermes* remove the surface layers from their fungus gardens each year as the rainy season begins, and spread the material over the surface of the ground above the nest. After two or three days this is carpeted with small white mushrooms which last for a day and then shrivel away. These mushrooms are disregarded by the termites but are looked upon with great favour by the local inhabitants. A day or two after the mushrooms have disappeared there is great activity among the termites in collecting twigs and dried leaves on the surface of the ground, and this is used to replace the surface of the fungus gardens. It is assumed that this material will contain spores produced by the mushrooms and so introduce sexual reproduction into the growth of the fungus in the nest. This practice appears to be limited to certain areas, and to particular species of termites when they occur in such areas.

The communication will be illustrated by coloured slides.

TEA will be served in the Library before the meeting.

### Serial Publications in the Library of the Royal Entomological Society of London.

A list of the serial publications in the Society's Library, with the titles abbreviated in accordance with the *World List of Scientific Periodicals*, has now been prepared. Copies may be obtained in the Society's office, price (to Fellows) 3s. 9d.



PROCEEDINGS OF THE ORDINARY MEETING HELD ON 3RD JUNE, 1953.

Professor P. A. Buxton, C.M.G., F.R.S., President, in the Chair.

Present 56 Fellows and 9 Visitors.

The Minutes of the Ordinary Meeting and of the Special Meeting held on 6th May were confirmed and signed by the President.

The names of the following candidates for election were read for the first time : Dr. R. L. Gupta, B.A., Ph.D. ; Mr. J. M. B. Harley, B.Sc. ; Mr. Bernard Heine-  
man ; Mr. Michael James Way, M.A.

For the second time (taken as read) : Mr. Syoziro Asahina, D.Sc. ; Mr. Alexander Gloag Fisker, B.Sc. ; Mr. Ernest Charles Harris ; Mr. Kenneth Malcolm Jack ; Mr. Malcolm Frederick Jenkins, B.Sc. ; Mr. Tecwyn Jones ; Mr. Mangal Singh Kapoor, M.Sc. ; Mr. F. Dad Khan, B.Sc. ; Mr. John Edward Knight ; Mr. James Robert Sutherland ; Mr. Michael George White, B.A. ; Mr. S. A. El-Ziady.

The Secretary read the names of the following newly elected Fellows of the Society : Mr. Thomas Chippendale, Springfield, Boroughbridge, York ; Mrs. Katherine Marjorie Frances Scott, M.Sc., Ph.D., Zoology Department, University of Cape Town, Rondebosch, Cape, South Africa ; Mr. Glyndwr Williams, Zoology Department, The University, Reading.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. J. S. Hough, Dr. D. B. Long, Mr. T. Singh and Mr. D. C. Twinn signed the Obligation Book and were admitted Fellows of the Society.

Dr. C. A. Clarke gave an account of further hybridising experiments in *Papilio*. He first recalled the features of the "original" and reciprocal crosses between *P. polyxenes asterias* and *P. machaon*. Repeated matings of these hybrids *inter se* had shown that they were sterile, and the same was true of the majority of the back crosses. Twice, however, a few fertile eggs had been laid, on both occasions by the *P. machaon* ♀ × *P. polyxenes* ♂ hybrid. The first female had been back crossed to a type male *polyxenes* and the second to a type male *machaon*.

*The back cross to polyxenes.*

From four fertile eggs four butterflies were obtained, all females. Three of them closely resembled their hybrid mother, while the fourth was very like a type female *polyxenes*. This butterfly laid fertile eggs when mated with a male *machaon* and the results of this pairing are awaited with interest.

*The back cross to machaon.*

Only one egg was laid. The butterfly, a female, resulting from this was a remarkable insect—essentially like *machaon* but considerably darker on the upper forewing and having a broad hybrid anal spot. The butterfly was successfully crossed with a type male *machaon* and eight eggs were laid. Seven of these failed to hatch although they darkened normally initially. The larva from the remaining egg was successfully reared and has recently pupated.

*Larval coloration.*

In the last instar *machaon* larvae have orange spots while in *polyxenes* they are yellow. In the hybrids described above orange appears to be dominant to yellow. In the hybrid-like back cross larvae noted above the spots were orange, while in the *polyxenes*-like one they were yellow. In the back cross to *machaon* the spots were orange.

*The hybrids of P. brevicauda* ♀ × *P. polyxenes* ♂.

Both sets of hybrids have been obtained and the butterflies from each cross appear identical. They have features of both parents; the tails are long like *polyxenes* but they are broad and blunt as in *brevicauda*. The yellow of *polyxenes* on the upper surface has replaced the orange yellow of *brevicauda*, but on the underside the broad row of orange spots on the fore-wing resembles *brevicauda* more closely than *polyxenes*.

The female hybrid is interesting. It does not differ from the male as is the case with the ♀ *polyxenes*, but there is less resemblance than in *brevicauda*, where the sexes resemble each other closely.

These hybrids are sterile *inter se* but two back crosses have been obtained with ♀ *polyxenes* and ♀ *brevicauda*. The offspring are now in the larval stage and have yellow spots.

*Hybrid* ♀ *brevicauda* × ♂ *machaon*.

The butterflies from this cross appeared identical with the "original" hybrid. The *machaon* features noted in the original hybrid dominate over the specifically *brevicauda* characters—the short tails and the orange spots. These hybrids were again sterile among themselves but a successful back cross has been obtained with a female *machaon*. The larvae resulting therefrom are now full-grown and have orange spots.

*Hybrid* ♀ *zelicaon* × ♂ *machaon*.

The upper side of this butterfly resembles *machaon* except for the anal spot, which is hybrid-like. The underside is like *zelicaon*. The reciprocal cross has so far not been obtained, although the mating has been effected several times. No back crosses have been obtained with this hybrid.

The communication was illustrated by coloured slides of the butterflies, and some set and living examples were shown.

A brief discussion followed Dr. Clarke's communication in which the President, Dr. O. W. Richards and Dr. E. Munroe (a visitor) took part.

Dr. D. B. Long gave a paper, illustrated by coloured slides, on the effect of crowding on the colour, growth and behaviour of lepidopterous larvae, an abstract of which appeared on page 24.

In the discussion which followed Dr. Uvarov said he had been particularly interested to hear that Dr. Long's experiments on crowding in Lepidoptera repeated some of the phenomena found in locusts.

Even more significant than the striking parallelism in colour was the response in rate of development, which in crowded cultures was not only more rapid but better synchronised, a factor which had considerable potential importance in nature. He hesitated to put forward any theory of evolutionary significance at this stage, but it was important to have established that these phenomena were not peculiar to locusts.

Mr. C. N. Hawkins suggested that the experiments should be carried out on larvae known only in one colour, all the species mentioned by Dr. Long having at least two colours under natural conditions. The hawkmoth larvae *Deilephila elpenor* and *porcellus* were solitary and normally brown in the final instar, but mature green forms were occasionally found, suggesting that some other factor was involved. If crowding implied a large number of larvae confined in a small closed space, such as an air-tight box, other factors, such as the heat generated



and the condition of the air in the container, would need to be considered. Certain larvae in the field, e.g., *jacobaeae*, normally occurred in large numbers on individual plants but their colour did not vary. An extension of the experiments might eliminate factors which were not critical.

After the President had said that he did not think that Dr. Long was making a generalisation on larval coloration, Dr. Long said he had worked with larvae of only one colour and also *Pieris brassicae* where the rate of development but not the colour was affected by crowding. In species where the colour was affected some genetic factor was possibly involved. While temperature experiments showed that lighter colours did result from higher temperatures, under the conditions of his experiments activity was so small that the heat generated was negligible.

Dr. Long continued, in reply to an enquiry by Dr. Clarke, that humidity had an effect during pupation, the cocoon being frequently darker under damp conditions.

E. B. BRITTON, *Honorary Secretary*.

---

The next meeting will be held on 7th October, at 5.30 p.m.

---

#### ADDITIONS TO THE LIBRARY.

##### *Presented.*

Clark, Gowan C., and Dickson, C. G. C. *Some South African Butterflies*. Sm. 8vo. Cape Town and London. 1952. [*Longman's Field Handbooks*.] [Commonwealth Institute of Entomology.]

##### *Purchased.*

Aubert, J. F. *Papillons d'Europe. II. Nocturnes et Sphingides*. Sm. 8vo. Neuchâtel and Paris. 1952. [*Les Beautés de la Nature*.]

Beaufoy, S., and E. M. *Butterflies of the Wood*. 8vo. London. 1953. [*The Country Naturalist*, No. 2.]

*Commentationes biologicae*. Tomus VIII. 8vo. Helsingfors. 1940-49. [Deals mainly with the insect fauna of the Azores and Madeira.]

Hodges, Dorothy. *The pollen loads of the honeybee*. 8vo. London. 1953.

Lengersdorf, F., and Mannheims, B. *Das kleine Fliegenbuch*. 8vo. München. 1951.

Princis, K. *Blattariae. Reports of the Lund University Chile Expedition, 1948-49*. 8. *Acta Univ. Lund* (N.F.) 48 (9), 1952.

Vité, J. P. *Die holzzerstörenden Insekten Mitteleuropas*. 2 vols. 8vo. Göttingen. 1952-53.

In addition, separates have been presented by Dr. W. H. R. Lumsden; Rothamsted Experimental Station; Mr. J. D. Bletchly; Dr. J. A. Freeman; The Director, Desert Locust Survey; Dr. C. H. N. Jackson; Dr. E. M. Du Porte; The Nature Conservancy; Professor G. C. Varley; London School of Hygiene and Tropical Medicine; Mr. D. F. Crosby; Dr. E. T. Nielsen; American Entomological Society; Dr. J. L. Cloudsley-Thompson; Dr. N. E. Hickin; and Mr. P. M. Miles.

## NOTICES

In addition to the *Transactions and Proceedings* (Series A, B and C), the following publications are available on application at the Society's rooms :—

THE GENERIC NAMES OF BRITISH INSECTS, WITH CHECK LISTS OF THE SPECIES, prepared by the Committee on Generic Nomenclature of the Royal Entomological Society of London, with the assistance of the Department of Entomology of the British Museum (Natural History) :—

| Part 1. Recommendations relating to the publication of the Committee's |                             |    |    |    |    |    |    |       |          |
|--|-----------------------------|----|----|----|----|----|----|-------|----------|
|  | Reports                     | .. | .. | .. | .. | .. | .. | Price | 6d.      |
| "  | 2. Rhopalocera              | .. | .. | .. | .. | .. | .. | "     | 3s. 6d.  |
| "  | 3. Odonata                  | .. | .. | .. | .. | .. | .. | "     | 3s. 6d.  |
| "  | 4. Neuroptera               | .. | .. | .. | .. | .. | .. | "     | 3s. 6d.  |
| "  | 5. Hymenoptera Aculeata     | .. | .. | .. | .. | .. | .. | "     | 15s. 0d. |
| "  | 6. Coleoptera Carabidae     | .. | .. | .. | .. | .. | .. | "     | 10s. 0d. |
| "  | 7. Coleoptera Hydradeephaga | .. | .. | .. | .. | .. | .. | "     | 5s. 0d.  |
| "  | 8. Hemiptera Heteroptera    | .. | .. | .. | .. | .. | .. | "     | 39s. 0d. |
| "  | 9. Coleoptera Staphylinidae | .. | .. | .. | .. | .. | .. | "     | 40s. 0d. |

### HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS.

The Society has undertaken the issue of a series of publications intended to provide illustrated Keys to the whole of the British Insect Fauna so far as this is possible.

It is proposed to cover this field in a series of ten volumes, arranged as follows :—

| I. Part 1. General Introduction. | Part 9. Ephemeroptera.† |
|----------------------------------|-------------------------|
| " 2. Thysanura.                  | " 10. Odonata.†         |
| " 3. Protura.                    | " 11. Thysanoptera.*    |
| " 4. Collembola.*                | " 12. Neuroptera.       |
| " 5. Dermaptera and Orthoptera.† | " 13. Mecoptera.        |
| " 6. Plecoptera.†                | " 14. Trichoptera.      |
| " 7. Psocoptera.*                | " 15. Strepsiptera.     |
| " 8. Anoplura.                   | " 16. Siphonaptera.     |

II. Hemiptera.\* III. Lepidoptera. IV and V. Coleoptera.\*  
 VI. Hymenoptera : Symphyta\* and Aculeata.\*  
 VII. Hymenoptera : Ichneumonicoidea.\*  
 VIII. Hymenoptera : Cynipoidea, Chalcidoidea and Serphoidea.  
 IX. Diptera : Nematocera† and Brachycera. X. Diptera : Cyclorrhapha.\*

The following parts are now available :—

- Vol. I, Part 5. Dermaptera and Orthoptera. By W. D. Hincks. Price 3s. 6d plus postage.
- Vol. I, Part 6. Plecoptera. By D. E. Kimmins. Price 3s. 6d. plus postage.
- Vol. I, Part 9. Ephemeroptera. By D. E. Kimmins. Price 3s. 6d. plus postage.
- Vol. I, Part 10. Odonata. By F. C. Fraser. Price 7s. 6d. plus postage.
- Vol. V, Part 12. Coleoptera : Cerambycidae. By E. A. J. Duffy. Price 3s. 6d. plus postage.
- Vol. VI, Part 2a. Hymenoptera : Symphyta (part). By R. B. Benson. Price 10s. 6d. plus postage.
- Vol. VI, Part 2b. Hymenoptera : Symphyta (contd.). By R. B. Benson. Price 15s. 0d. plus postage.
- Vol. IX, Part 1. Diptera : Introduction and Key to Families. By H. Oldroyd. Price 7s. 6d. plus postage.
- Vol. IX, Part 2. Diptera, Nematocera : Families TIPULIDAE to CHIRONOMIDAE. By R. L. Coe, Paul Freeman and P. F. Mattingly. Price 20s. 0d. plus postage.

Parts marked † are on sale or in the press, those marked \* in preparation.

Orders for the complete series or for separate parts can be placed with the Registrar at the Society's rooms now, but prices can only be quoted for those parts already issued.

Fellows of the Society may purchase one copy at a discount of 25 per cent. ; additional copies at the full published price.

STYLOPS, a Journal of Taxonomic Entomology.

1932-1935. Vols. 1-4 (all issued). Price £1 16s. 0d. each ; to Fellows £1 7s. 0d.

ABSTRACT OF PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON. 1935. Nos. 1-6 (all issued). 3s. 0d.

HUBNER : A BIBLIOGRAPHICAL AND SYSTEMATIC ACCOUNT OF THE ENTOMOLOGICAL WORKS OF JACOB HUBNER AND THE SUPPLEMENTS THERETO. In 2 vols. By Francis Hemming. Price : Vol. 1. 605 pp. £1 15s. 0d. ; Vol. 2. 275 pp. 15s. 0d.

THE HISTORY OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1833-1933. By S. A. Neave, assisted by F. J. Griffin. Price 10s. 6d.

SERIAL PUBLICATIONS IN THE LIBRARY OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON. 1951. Price 5s. 0d.

Published by THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON and sold at its rooms, 41, Queen's Gate, S.W. 7, price 1s. 0d.